

# Compact filtered power entry module



- Complies with IEC/EN 60601-1
- Rated currents up to 10 A
- Single or dual-fuse holder
- Fuses Ø5 x 20 mm
- 2-pole rocker switch
- General purpose application
- Optional earth line choke (E type)
- Optional medical versions (B type)



### Performance indicators

Attenuation performance



Rated current [A]



## Technical specifications

<b>Maximum continuous operating voltage</b>	250 V, 50/60 Hz
<b>Operating frequency</b>	DC to 400 Hz
<b>Rated currents</b>	1 to 10 A @ 40°C max.
<b>High potential test voltage</b>	P → PE 2000 VAC for 2 sec (standard types) P → PE 2500 VAC for 2 sec (B types) P → N 760 VAC for 2 sec
<b>Protection category</b>	IP 40 according to IEC 60529
<b>Temperature range (operation and storage)</b>	-25°C to +85°C (25/85/21)
<b>Design corresponding to</b>	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
<b>Flammability corresponding to</b>	UL 94 V-2 or better
<b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>	1,500,000 hours
<b>Fuse holder</b>	1 or 2 fuses (Ø5 x 20 mm) (certified to IEC 60127-6)
<b>Marking</b>	max. 250 V ~ (text is print. below fuse symbol)
<b>Rocker switch description</b>	
<b>Function</b>	2-pole, dark not illuminated Marking I - 0
<b>Electrical specifications</b>	Inrush current 82 A 6,000 on-off operations according to UL 1054, TV5 10,000 on-off operations according to ENEC
<b>Switch ratings</b>	
<b>USA (UL) and Canada (C-UL)</b>	10 A, 125 VAC; 10 A, 250 VAC; 1/3 HP
<b>Europe (ENEC)</b>	10 A (4 A), 250 VAC*
<b>Mechanical life</b>	50,000 cycles

\* Value in () relates to the inductive current charge:  $\cos\phi = 0.65$

### Approvals & Compliances



(CQC except HI-types)

The FN 280 power entry module combines an IEC inlet, a mains filter with single or dual-fuse holder and a 2-pole rocker switch in a small form factor. Choosing FN 280 product line brings you the rapid availability of a standard filter associated with the necessary safety acceptances. Standard IEC connector filters are a practical solution helping you to pass EMI system approval in a short time. A wide selection on amperage ratings, fuse options, mounting possibilities and filters for medical applications are designed to offer you the desired solution.

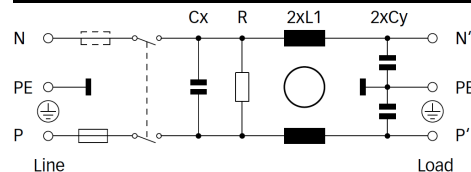
### Features and benefits

- High conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- Rear/front or snap-in mounting
- Single or dual-fuse holder
- 2-pole rocker switch
- Custom-specific versions are available on request

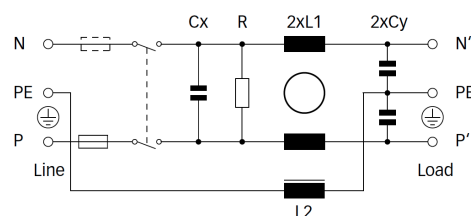
### Typical applications

- Portable electrical and electronic equipment
- Consumer goods
- EDP and office equipment
- Single-phase power supplies, switch-mode power supplies
- Test and measurement equipment
- Medical equipment

### Typical electrical schematic



### E types



## Filter selection table

	Rated current @ 40°C (25°C) [A]	Leakage current* @ 230 VAC/50 Hz [µA]	Inductance**		Capacitance**		Resistance** R [kΩ]	Output connections	Fuses*** [Qty]	Weight [g]
			L1 [mH]	L2 [mH]	Cx [nF]	Cy [nF]				
<b>FN 281-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	1	90
<b>FN 281-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	1	90
<b>FN 281-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	1	90
<b>FN 281-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	1	90
<b>FN 281-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	1	90
<b>FN 282-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	2	90
<b>FN 282-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	2	90
<b>FN 282-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	2	90
<b>FN 282-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	2	90
<b>FN 282-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	2	90
<b>FN 283-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	1	90
<b>FN 283-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	1	90
<b>FN 283-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	1	90
<b>FN 283-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	1	90
<b>FN 283-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	1	90
<b>FN 284-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	2	90
<b>FN 284-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	2	90
<b>FN 284-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	2	90
<b>FN 284-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	2	90
<b>FN 284-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	2	90
<b>FN 285-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	1	90
<b>FN 285-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	1	90
<b>FN 285-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	1	90
<b>FN 285-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	1	90
<b>FN 285-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	1	90
<b>FN 286-1-06</b>	1 (1.2)	373	7.5		220	2.2	1000	-06	2	90
<b>FN 286-2-06</b>	2 (2.4)	373	2		220	2.2	1000	-06	2	90
<b>FN 286-4-06</b>	4 (4.8)	373	1		220	2.2	1000	-06	2	90
<b>FN 286-6-06</b>	6 (7.2)	373	0.45		220	2.2	1000	-06	2	90
<b>FN 286-10-06</b>	10 (11.6)	373	0.34		220	2.2	1000	-06	2	90
<b>FN 283 E-1-06</b>	1 (1.2)	373	7.5	0.4	220	2.2	1000	-06	1	100
<b>FN 283 E-2-06</b>	2 (2.4)	373	2	0.4	220	2.2	1000	-06	1	100
<b>FN 283 E-4-06</b>	4 (4.8)	373	1	0.4	220	2.2	1000	-06	1	100
<b>FN 283 E-6-06</b>	6 (7.2)	373	0.45	0.4	220	2.2	1000	-06	1	100
<b>FN 284 E-1-06</b>	1 (1.2)	373	7.5	0.4	220	2.2	1000	-06	2	100
<b>FN 284 E-2-06</b>	2 (2.4)	373	2	0.4	220	2.2	1000	-06	2	100
<b>FN 284 E-4-06</b>	4 (4.8)	373	1	0.4	220	2.2	1000	-06	2	100
<b>FN 284 E-6-06</b>	6 (7.2)	373	0.45	0.4	220	2.2	1000	-06	2	100
<b>FN 282 B-1-06</b>	1 (1.2)	2	7.5		220		1000	-06	2	90
<b>FN 282 B-2-06</b>	2 (2.4)	2	2		220		1000	-06	2	90
<b>FN 282 B-4-06</b>	4 (4.8)	2	1		220		1000	-06	2	90
<b>FN 282 B-6-06</b>	6 (7.2)	2	0.45		220		1000	-06	2	90
<b>FN 282 B-10-06</b>	10 (11.6)	2	0.34		220		1000	-06	2	90

\* Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

\*\* Tolerances apply: Inductance: -30/+50%, Capacitance: ±20%, Resistance: ±10%

\*\*\* Filters are delivered without fuse.

Filter	Rated current @ 40°C (25°C) [A]	Leakage current* @ 230 VAC/50 Hz [µA]	Inductance**		Capacitance**		Resistance** R [kΩ]	Output connections	Fuses*** [Qty]	Weight [g]
			L1 [mH]	L2 [mH]	Cx [nF]	Cy [nF]				
FN 284 B-1-06	1 (1.2)	2	7.5		220		1000	-06	2	90
FN 284 B-2-06	2 (2.4)	2	2		220		1000	-06	2	90
FN 284 B-4-06	4 (4.8)	2	1		220		1000	-06	2	90
FN 284 B-6-06	6 (7.2)	2	0.45		220		1000	-06	2	90
FN 284 B-10-06	10 (11.6)	2	0.34		220		1000	-06	2	90
FN 286 B-1-06	1 (1.2)	2	7.5		220		1000	-06	2	90
FN 286 B-2-06	2 (2.4)	2	2		220		1000	-06	2	90
FN 286 B-4-06	4 (4.8)	2	1		220		1000	-06	2	90
FN 286 B-6-06	6 (7.2)	2	0.45		220		1000	-06	2	90
FN 286 B-10-06	10 (11.6)	2	0.34		220		1000	-06	2	90

\* Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

\*\* Tolerances apply: Inductance: -30/+50%, Capacitance: ±20%, Resistance: ±10%

\*\*\* Filters are delivered without fuse.

### Product selector

FN 28xx-yy-zz

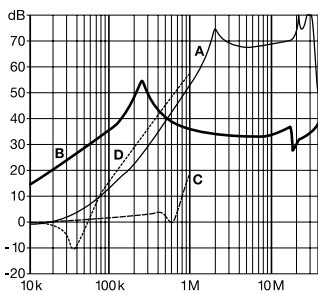
- 06: Faston 6.3 x 0.8mm (spade/soldering)
- 1 to 10: Rated current
- Blank: Standard version
- E: Optional earth line choke
- B: Medical version (with bleed resistor and without Y2-capacitor)
- 1: Flange mounting version top/bottom, single-fuse
- 2: Flange mounting version top/bottom, dual-fuse
- 3: Flange mounting version left/right, single-fuse
- 4: Flange mounting version left/right, dual-fuse
- 5: Snap-in version, single-fuse
- 6: Snap-in version, dual-fuse

For example: FN 281-6-06, FN 283 B-04-06, FN 283 E-1-06

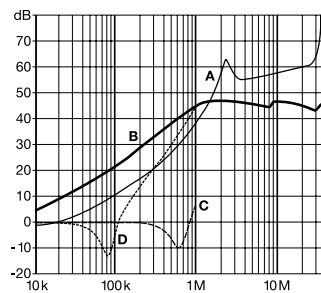
### Typical filter attenuation

Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

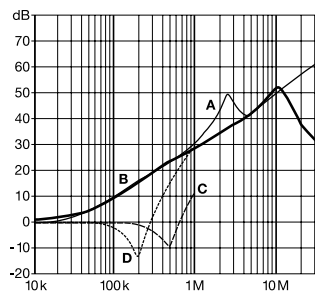
1 A types



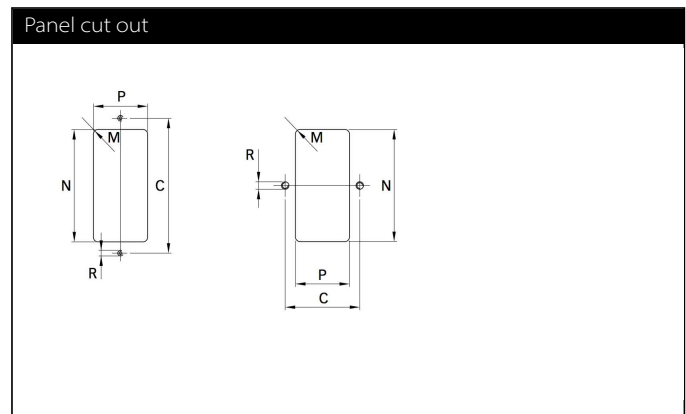
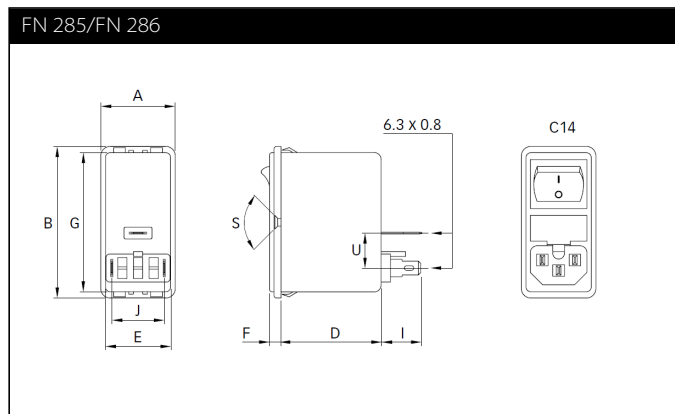
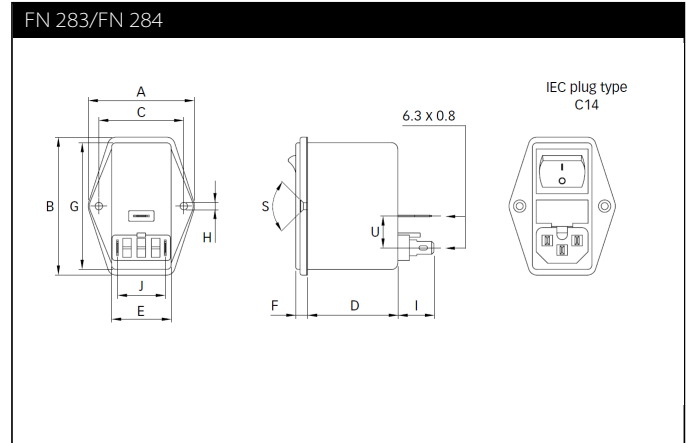
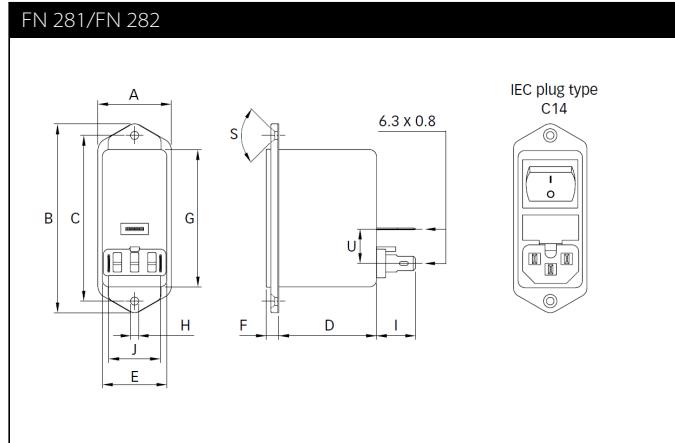
2 to 6 A types



10 A types



## Mechanical data



## Dimensions

	FN 281	FN 282	FN 283	FN 284	FN 285	FN 286	Tolerances
<b>A</b>	32	32	50	50	32	32	±0.3
<b>B</b>	82	82	65	65	65	65	±0.3
<b>C</b>	72	72	40	40			±0.1
<b>D</b>	43.1	43.1	43.1	43.1	43.6	43.6	±0.3
<b>E</b>	28.5	28.5	28.5	28.5	28.5	28.5	±0.25
<b>F</b>	5.5	5.5	5.5	5.5	5	5	±0.3
<b>G</b>	59.95 max.	59.95 max.	59.95 max.	59.95 max.	59.95 max.	59.95 max.	
<b>H</b>	Ø3.5	Ø3.5	Ø3.3	Ø3.3			
<b>I</b>	13.4	16.2	13.4	16.2	13.9	16.7	±0.3
<b>J</b>	22.5	22.5	22.5	22.5	22.5	22.5	
<b>M</b>	R ≤2.5	R ≤2.5	R ≤2.5	R ≤2.5	R ≤2.5	R ≤2.5	
<b>N</b>	60	60	60	60	61.5+0.2/-0*	61.5+0.2/-0*	+0.5/-0
<b>P</b>	29	29	29	29	29	29	+0.5/-0
<b>R</b>	M3	M3	M3	M3			
<b>S</b>	90°	90°	90°	90°			

\* For a panel thickness between 0.8 and 3 mm

All dimensions in mm; 1 inch = 25.4 mm  
Tolerances according: ISO 2768-m/EN 22768-m

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.



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